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1997

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XRD  
90

CONFIDENTIAL

Security Information

✓ ⑨ BUREAU OF SHIPS GROUP 1

# TECHNICAL INSPECTION REPORT

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Security Information

Classification (Cancelled) (Changed to \_\_\_\_\_)  
By Authority of JOINT CHIEFS OF STAFF JCS 1795/36 DATED 15 APRIL 1949  
By John D. Leyette Date 24 SEP 1953

67455  
3

⑥ OPERATION CROSSROADS.  
NAGATO (Ex Jap BB).

TEST BAKER UG.

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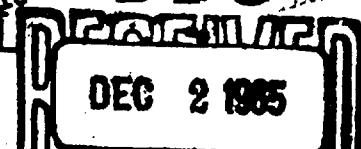
Director  
Defense Atomic Support Agency  
Washington, D. C. 20301

⑪ 1947,  
⑫ 24 P.  
⑬ XRD-90

OPERATION CROSSROADS

DIRECTOR OF SHIP MATERIALS

JOINT TASK FORCE ONE



GROUP 3 TIS 14 N 1965  
Downgraded at 12 year mark  
Not automatically declassified

REG. NO. [REDACTED]

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(193600)

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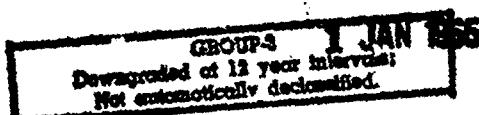
F.X. Forest,  
Capt. U.S.N.

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NAGATO (Ex-Japanese BB)

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## EX JAPANESE BATTLESHIP NAGATO

### SHIP CHARACTERISTICS

Completed: November 1920.

Modernized: 1935 - 36.

#### HULL

Length Overall: 700 feet 0 inches.

Beam (without bulges): 95 feet 0 inches.

Drafts at time of test: Fwd. 34 feet 7 inches.

Aft. 34 feet 10 inches.

Standard displacement: 34,000 tons.

Displacement at time of test: 47,790 tons.

#### MAIN PROPULSION PLANT

Main Engines: Four main turbine sets, one set for each shaft. Mfgd. by Westinghouse Co. Each set consists of a H.P., L.P. and astern turbine.

Reduction Gears: Four units installed in ship.

Single reduction.

Main Condensers: Four units installed in ship.

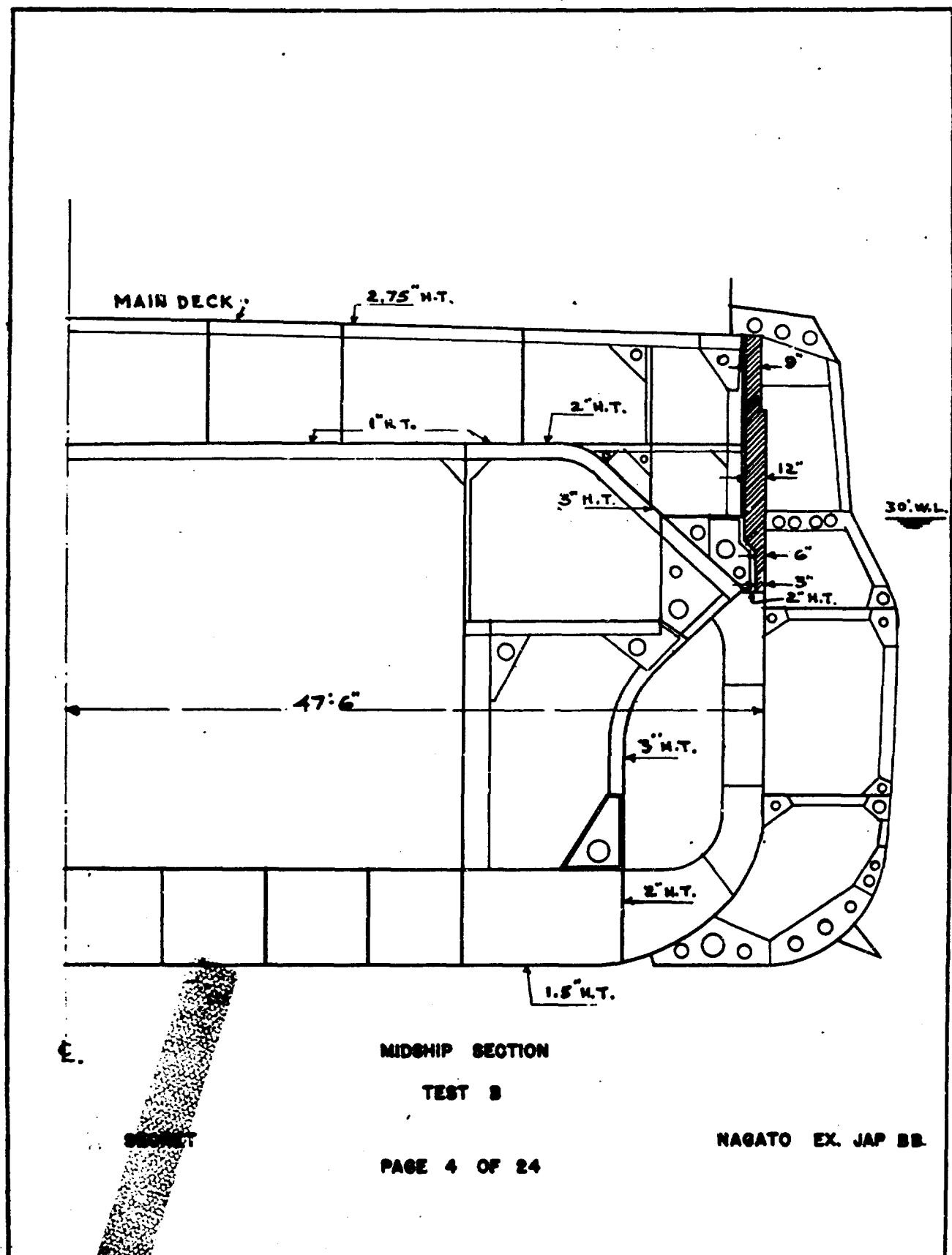
Boilers: Ten units installed in ship.

Main shafts: Four installed in ship.

Propellers: Four installed in ship.

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## TECHNICAL INSPECTION REPORT

### OVERALL SUMMARY

#### I. Target Condition After Test.

##### (a) Drafts after test; list; general areas of flooding, sources.

The NAGATO sank four and one half days after "B" burst.

The NAGATO is shown as she floated prior to "B" burst in the photographs on pages 10, 11, 12, and 13. After the bomb explosion the NAGATO remained afloat but had a slight list to starboard which increased to about five degrees 27 July. (See photographs on pages 14 and 15). On 28 July (see photographs on pages 16, 17 and 18) the draft readings had increased a little over three feet and the list was about eight degrees. By the morning of 29 July part of her main deck aft was awash as shown in photographs on pages 19, 20, 21 and 22. During the night of 29 and 30 July she sank, in all probability, by capsizing as a result of progressive flooding.

The watertight integrity of the NAGATO was found by test to be poor prior to the test. It was dependent solely upon a fairly tight shell plus pumping facilities to handle the water which leaked through the shell. The holes discovered in the shell plating by the divers after B test plus known leakage sources were the causes of flooding. The absence of internal watertight integrity permitted progressive flooding.

The probable area of main flooding was around frame 190 starboard.

##### (b) Structural damage.

The following information regarding damage to the NAGATO is taken from the diver's reports.

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A number of dents in the underwater body were visible. These include dents between frames, as well as those where both longitudinal and transverse framing had given way. A hole about two feet in diameter about seven feet above the port bilge keel at frame 140 where plating had ruptured out, was emitting streams of air bubbles and fuel oil 29 days after the burst. There were seven other major leakage points but it was not determined whether they were caused by loose rivets or by holes in the shell.

(c) Other damage.

Unobserved.

II. Forces Evidenced and Effects Noted.

(a) Heat.

Unobserved.

(b) Fires and explosions.

There were no fires or explosions observed.

(c) Shock.

The NAGATO was observed to have been displaced sideways, presumably by the air pressure and water wave, a distance of approximately 400 yards. See photographs on pages 23 and 24.

(d) Pressure.

Unobserved.

III. Results of Test on Target.

(a) Effect on propulsion and ship control.

Unobserved.

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(b) Effect on gunnery and fire control.

Unobserved.

(c) Effect on watertight integrity and stability.

Completely destroyed.

(d) Effect on personnel and habitability.

Unobserved prior to sinking.

(e) Total effect on fighting efficiency.

The ship, though it remained afloat, was completely immobilized four days after the burst. Whether the ship could have been saved if a crew had been aboard is unknown.

#### IV. General Summary of Observer's Impressions and Conclusions.

Photographs of the burst taken from the towers and planes, after burst photos taken by PBM Charlie, the report of the technical observer in PBM Charlie, the MPG-1 radar scope pictures, the diver's reports, the initial boarding team reports and photographs are the total available sources of material for this report.

The NAGATO was visible for about two seconds immediately after the "B" explosion. She was then obscured by clouds for about 15 minutes. She was visible thereafter until she sank on the night of July 29 and 30.

The divers found the NAGATO lying on the bottom at an angle of 120°, with the starboard side down. She was apparently lying on top of the bottom mud and clear of any powdered coral covering. The radioactivity of the ship was relatively slight but the radioactivity on the bottom limited the diving time.

#### V. Preliminary Recommendations.

None.

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## VI. Pre-test Statistics.

Instructions for loading the vessel specified the following:

ITEM	LOADING
Fuel Oil	15%
Diesel Oil	15%
Gasoline	None
Ammunition	Minimum
Potable and Reserve Feed Water	95%
Salt Water Ballast	95%

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

The drafts of the NAGATO at the time of "B" burst were unknown as no draft marks were fitted in her. She had no list.

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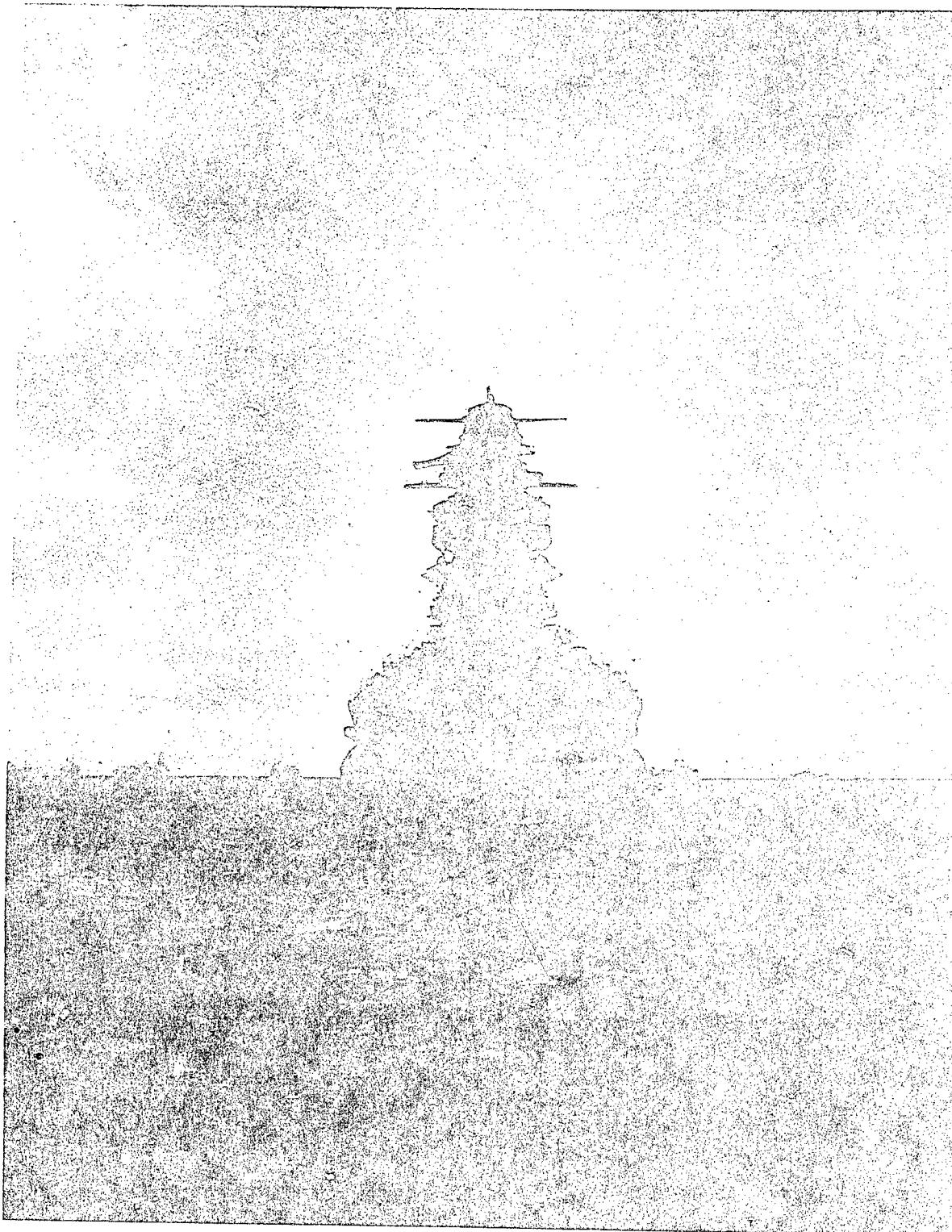
**PHOTOGRAPHS**

**TEST BAKER**

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**NAGATO (Ex-Japanese BB)**

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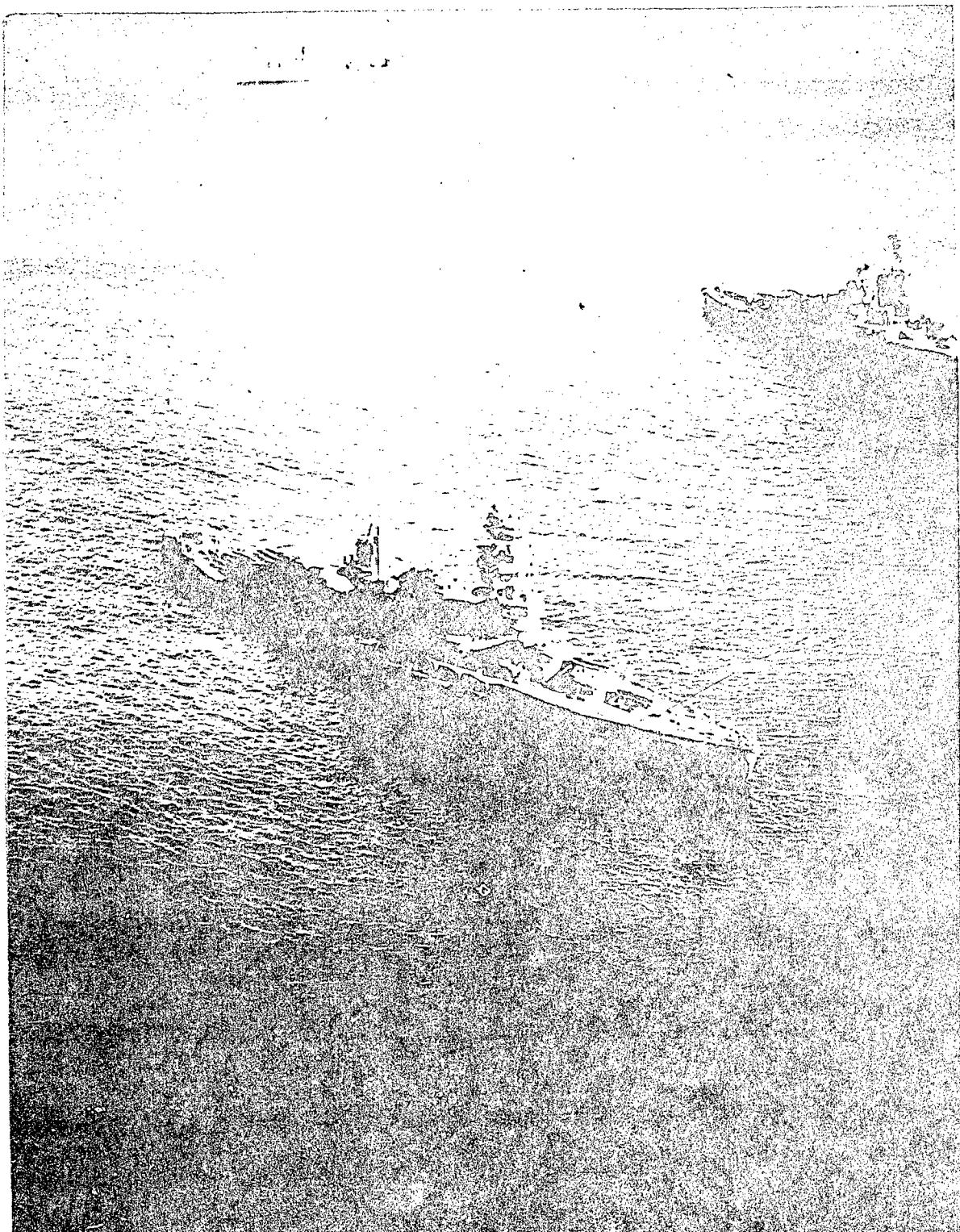
AA-CR-227-91-11 July 46 Print 35 - Pre "B" burst view of  
NAGATO's bow.

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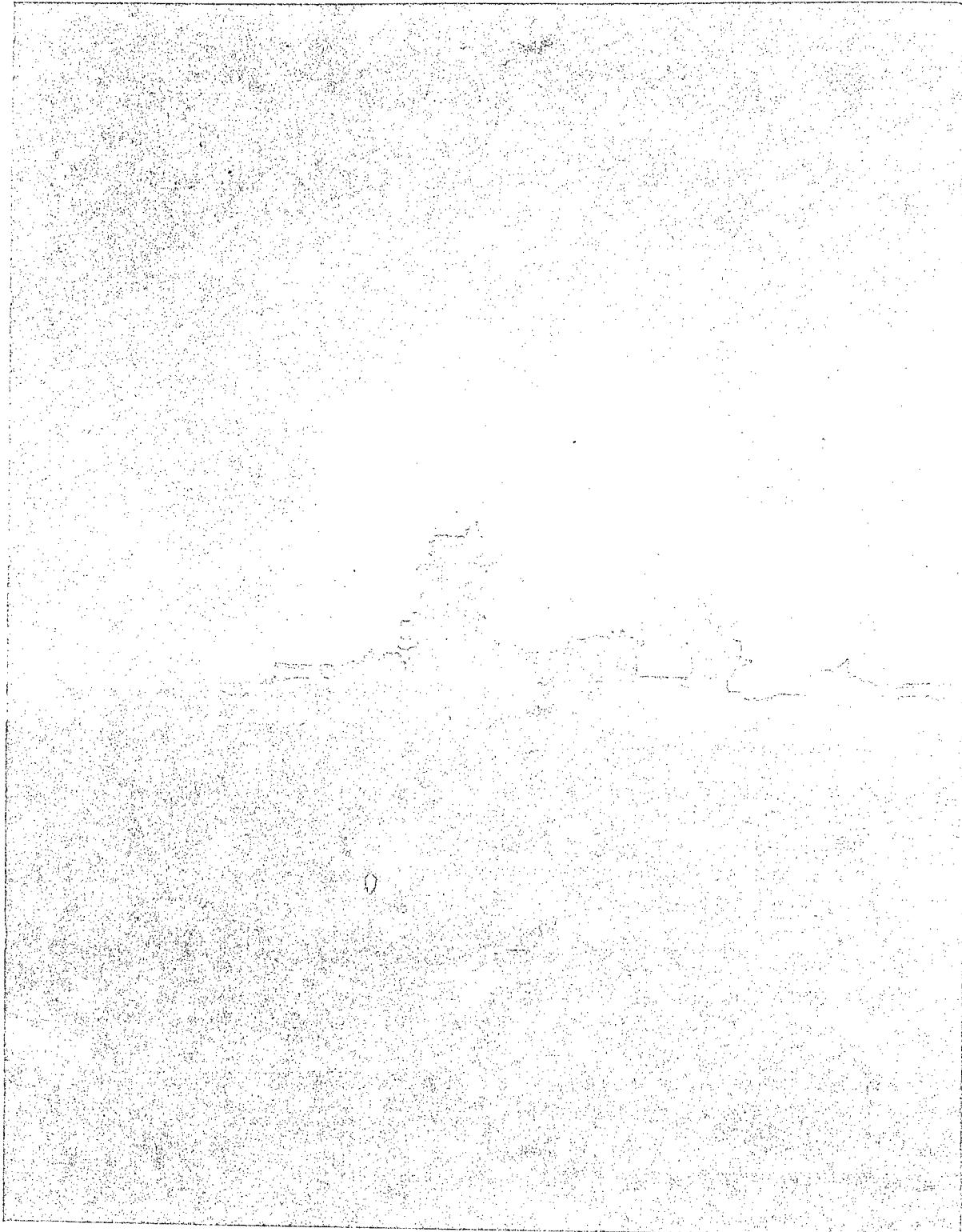
DB-CR-113-286 (-11) 25 July 46/20''/OBL/ Var Print 17 Secret  
Pre "B" burst view of NAGATO's starboard side.

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BB-CR-227-513/21 July 46 Print 7 Pre "B" burst view of  
NAGATO's port side.

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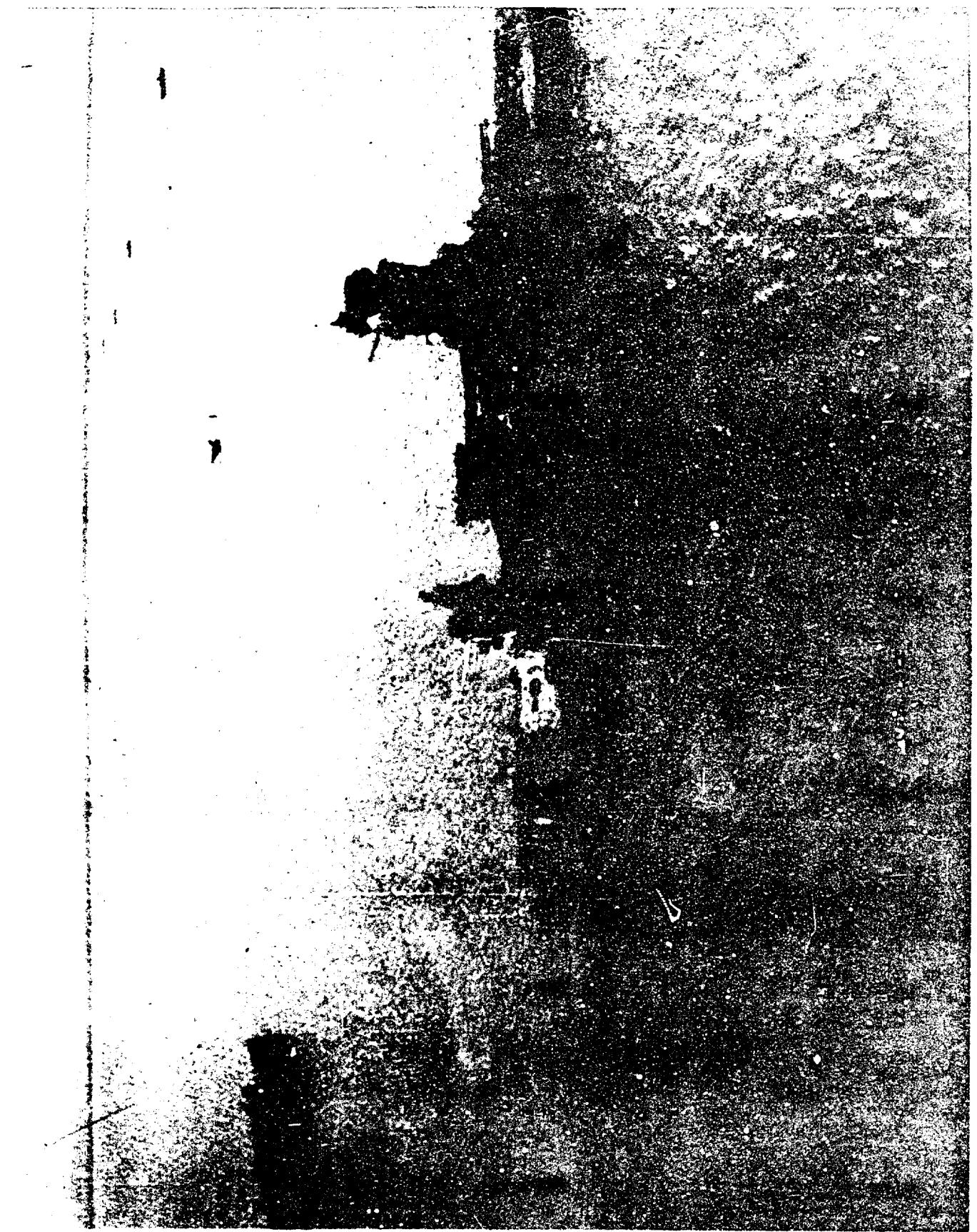
NAGATO (Ex-Japanese BB)



BB-CR-227-513/21 July 46 Print 1 - Pre "B" burst view of  
NAGATO's stern.

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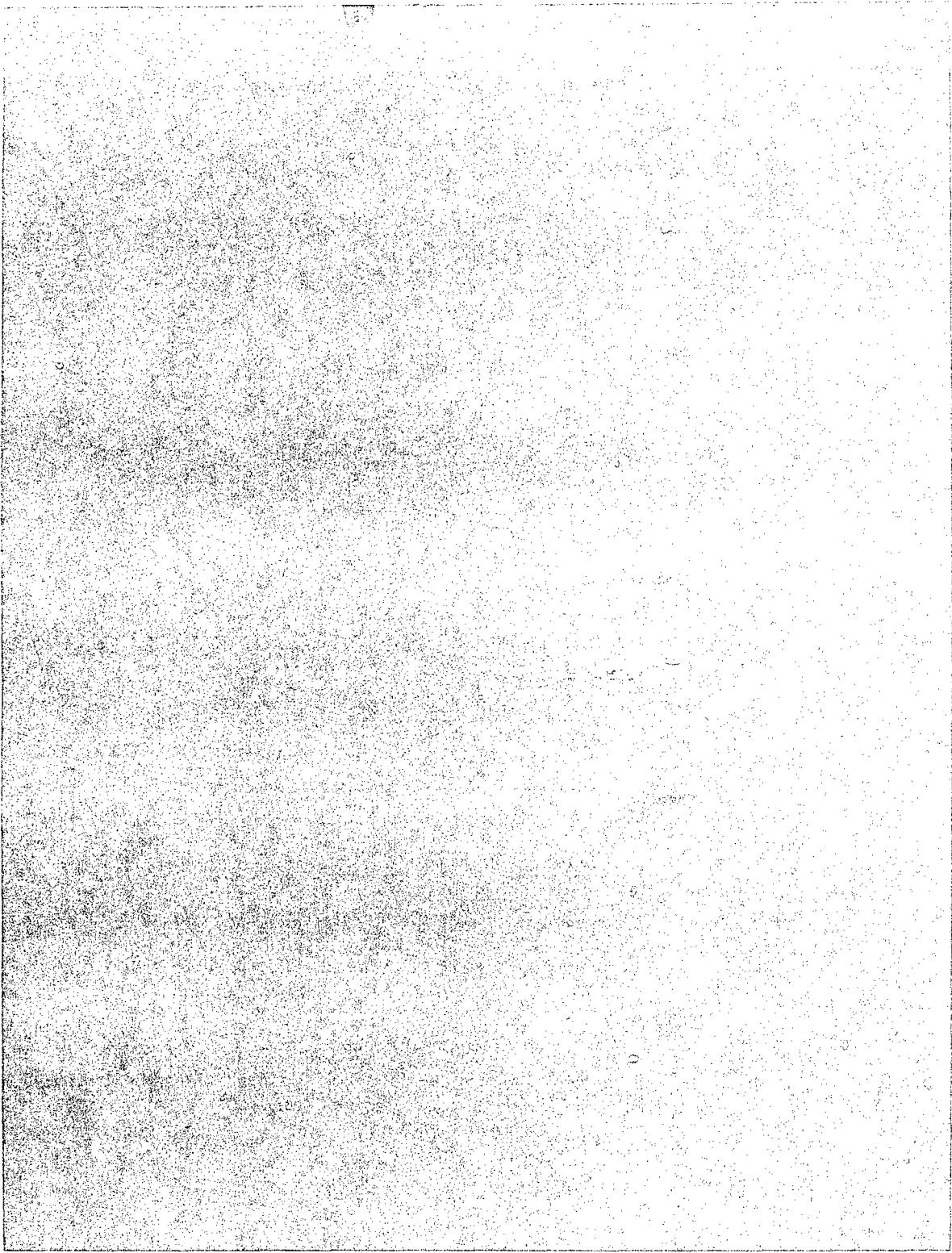
NAGATO (Ex-Japanese BB)



AB-CR-52 PBM7 of 27 July 46/8 1/4''/OBL/200' Secret Print 10  
NAGATO as she floated on 27 July 1946.

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AB-CR-52 PBM7 27 July 46/8 1/4''/OBL/500' Secret Print 114  
Port view of NAGATO taken 27 July 1946.

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AB-CR-197 PBM 8 28 July 46/ 8 1/4" OBL 500' Secret Print  
41 NAGATO as she floated on 28 July 1946.

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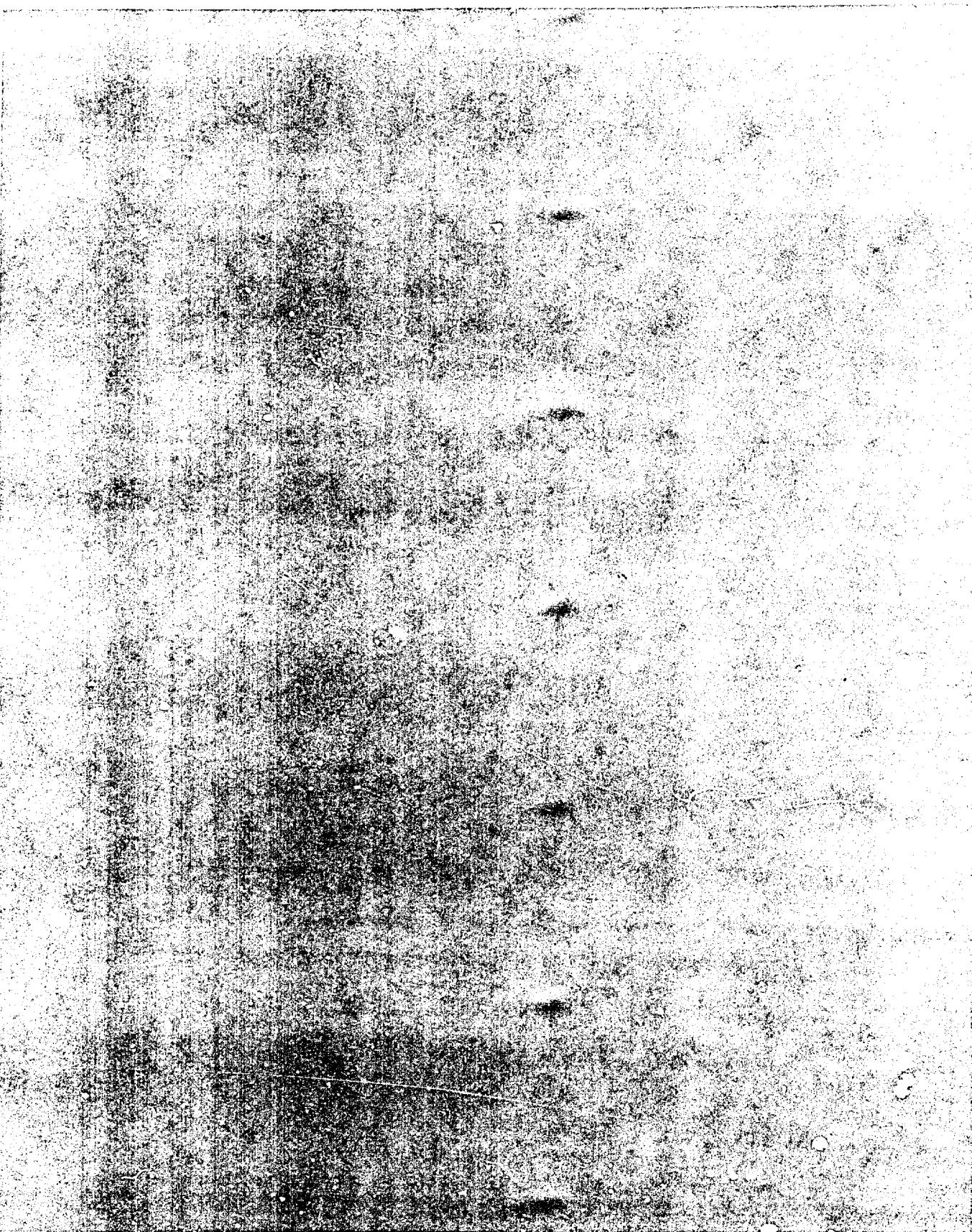
NAGATO (Ex-Japanese BB)



AB-CR-197 PBM 8 28 July 46/8 1/4''/OBL 500' Secret Print 46  
NAGATO starboard deck edge aft of amidship almost level with  
water's surface on 28 July.

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NAGATO (Ex-Japanese BB)



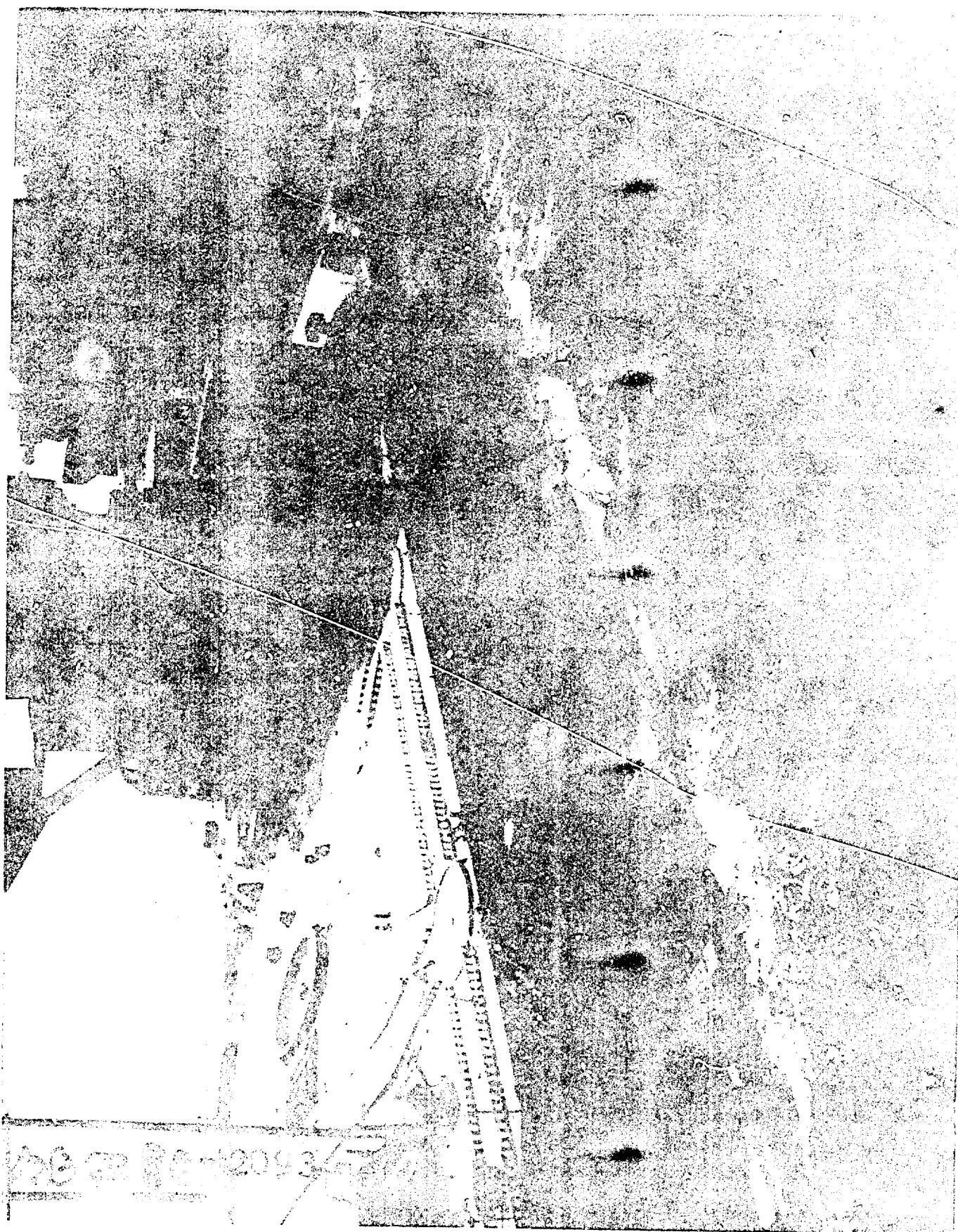
AB-CR-197 PBM 8 28 July 1946/8 1/4" /OBL 500' Secret Print 45-  
starboard side of NAGATO on 28 July. Buoy to which LCT 1114 was  
moored in B test, can be seen atop house structure amidships.

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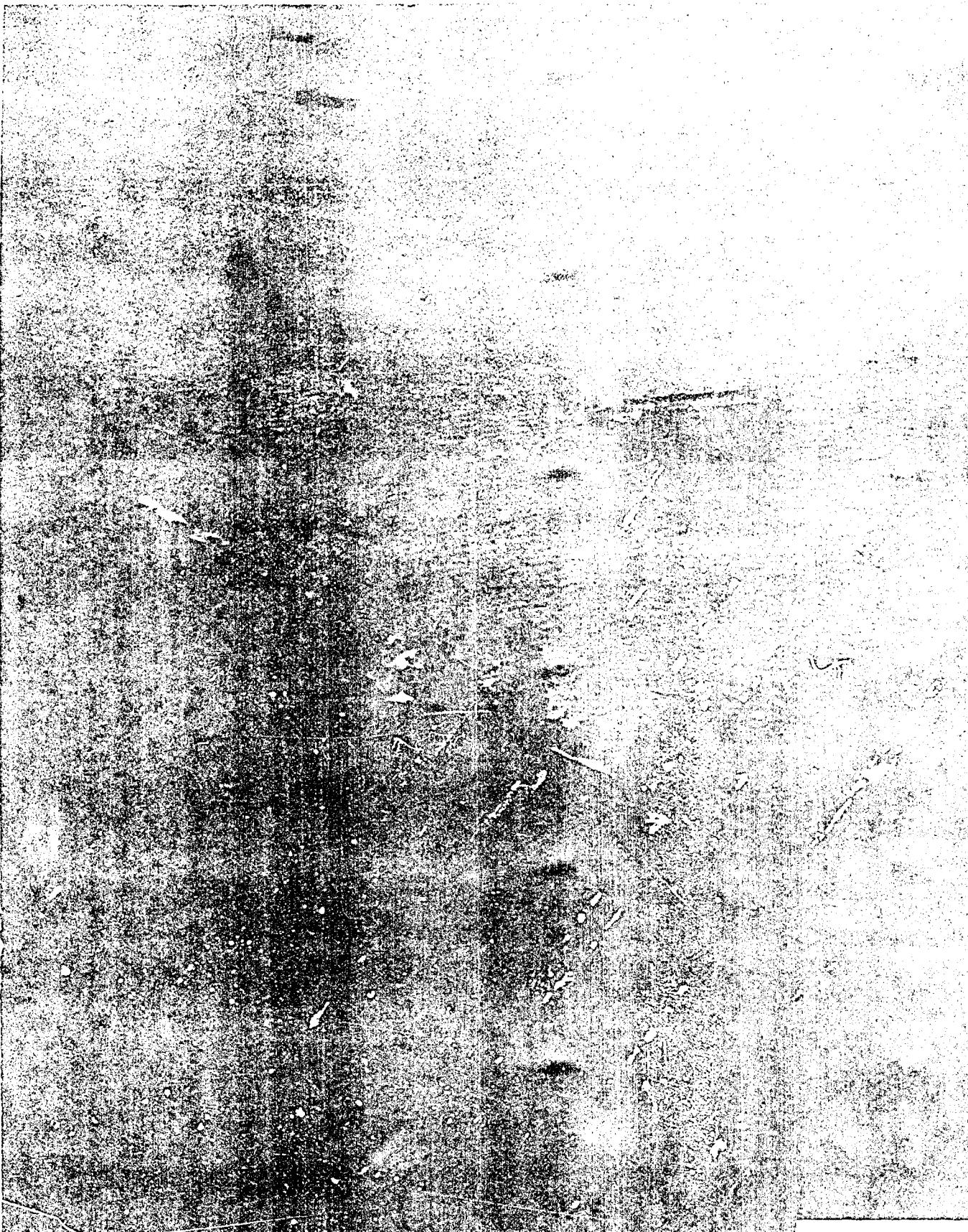
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AB-CR-80-2093-10. Starboard deck of NAGATO becoming awash at frame 200 in morning of 29 July.

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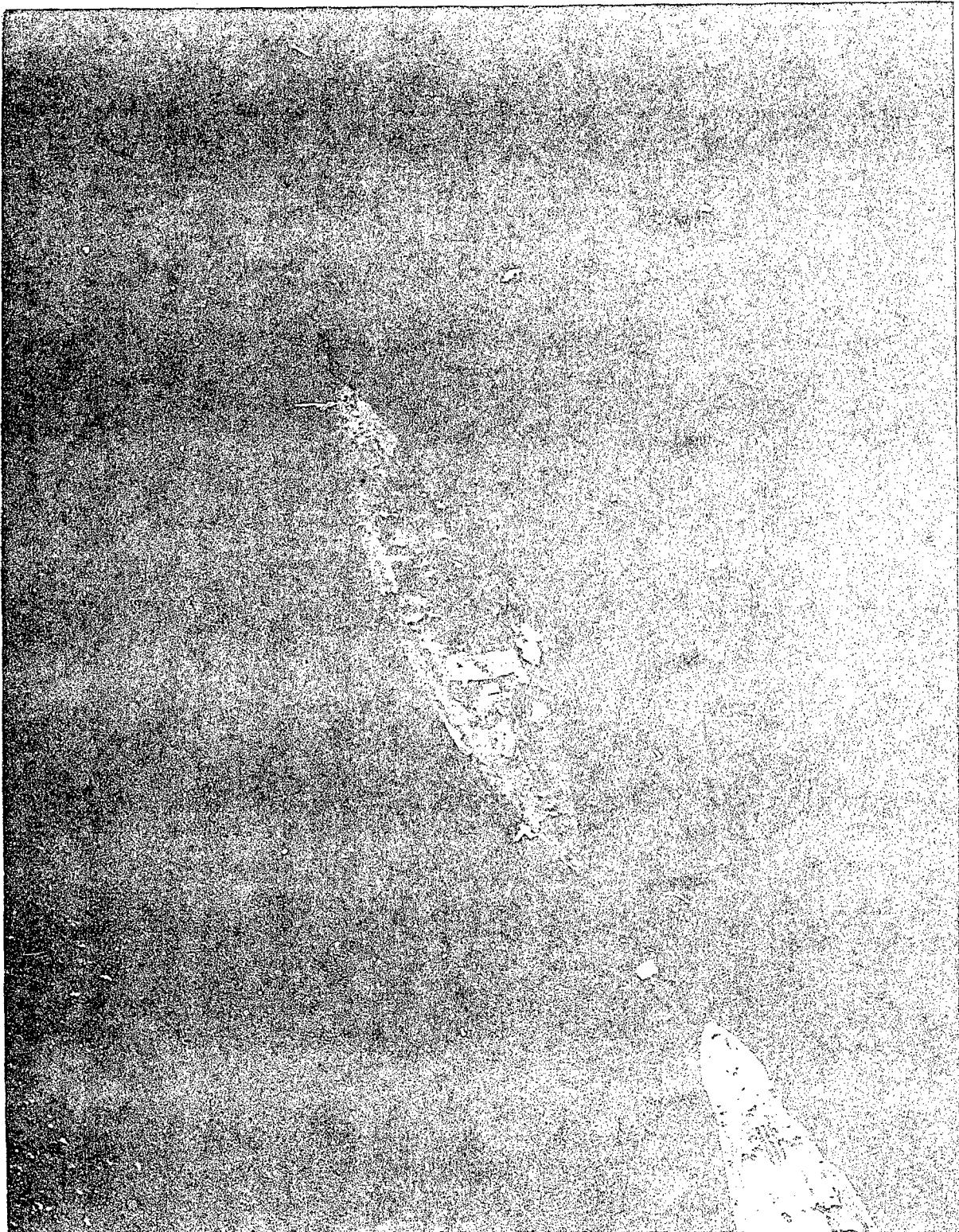
AB-CR-197 PBM 9 29 July 46/8 1/4''/OBL/1000'. Secret Prints  
10 NAGATO on morning of 29 July showing main deck aft  
becoming awash.

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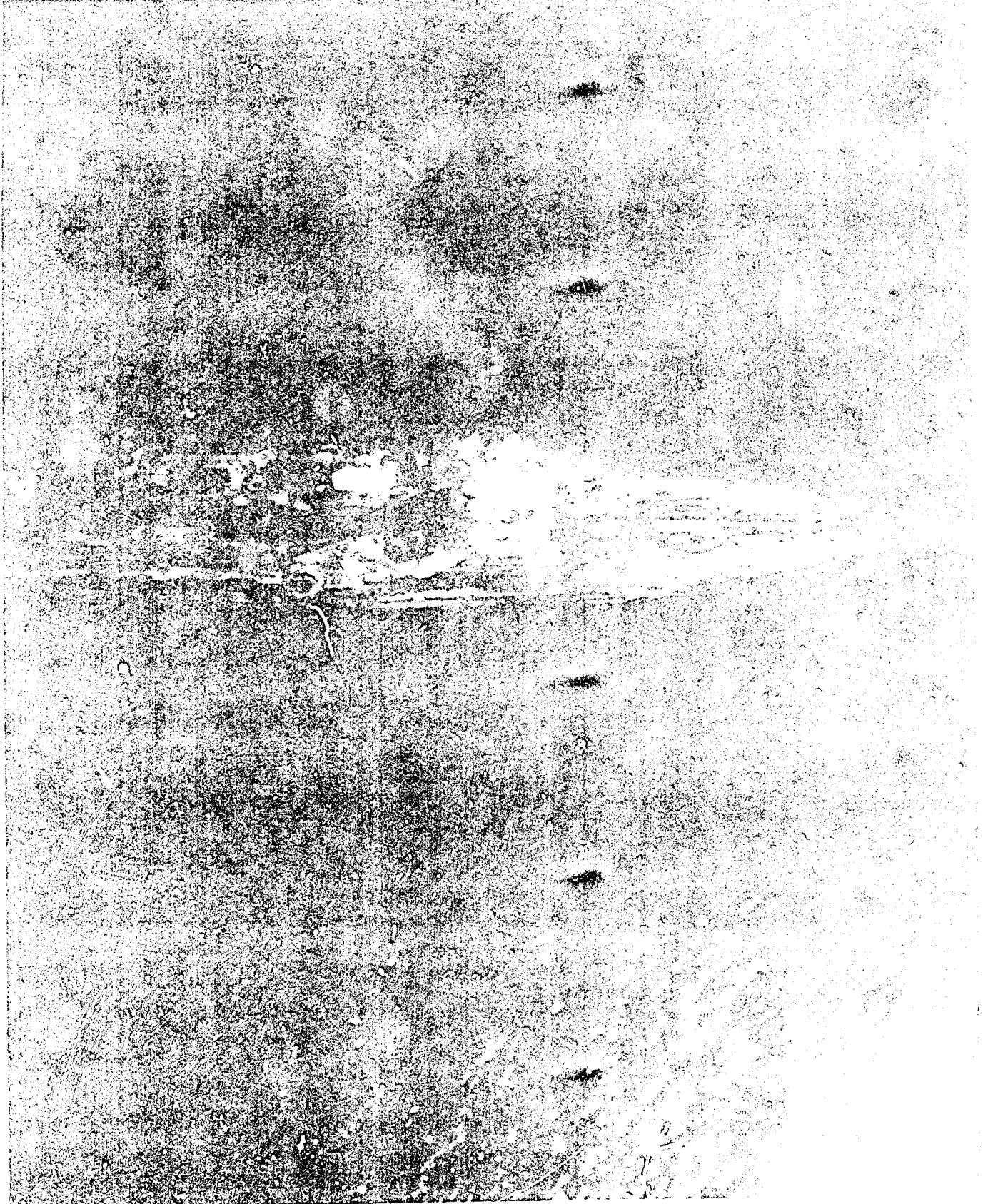
AB-CR-197-PBM 9 29 July 46/8 1/4''/OBL/1000' Secret Print 27.  
NAGATO on 29 July.

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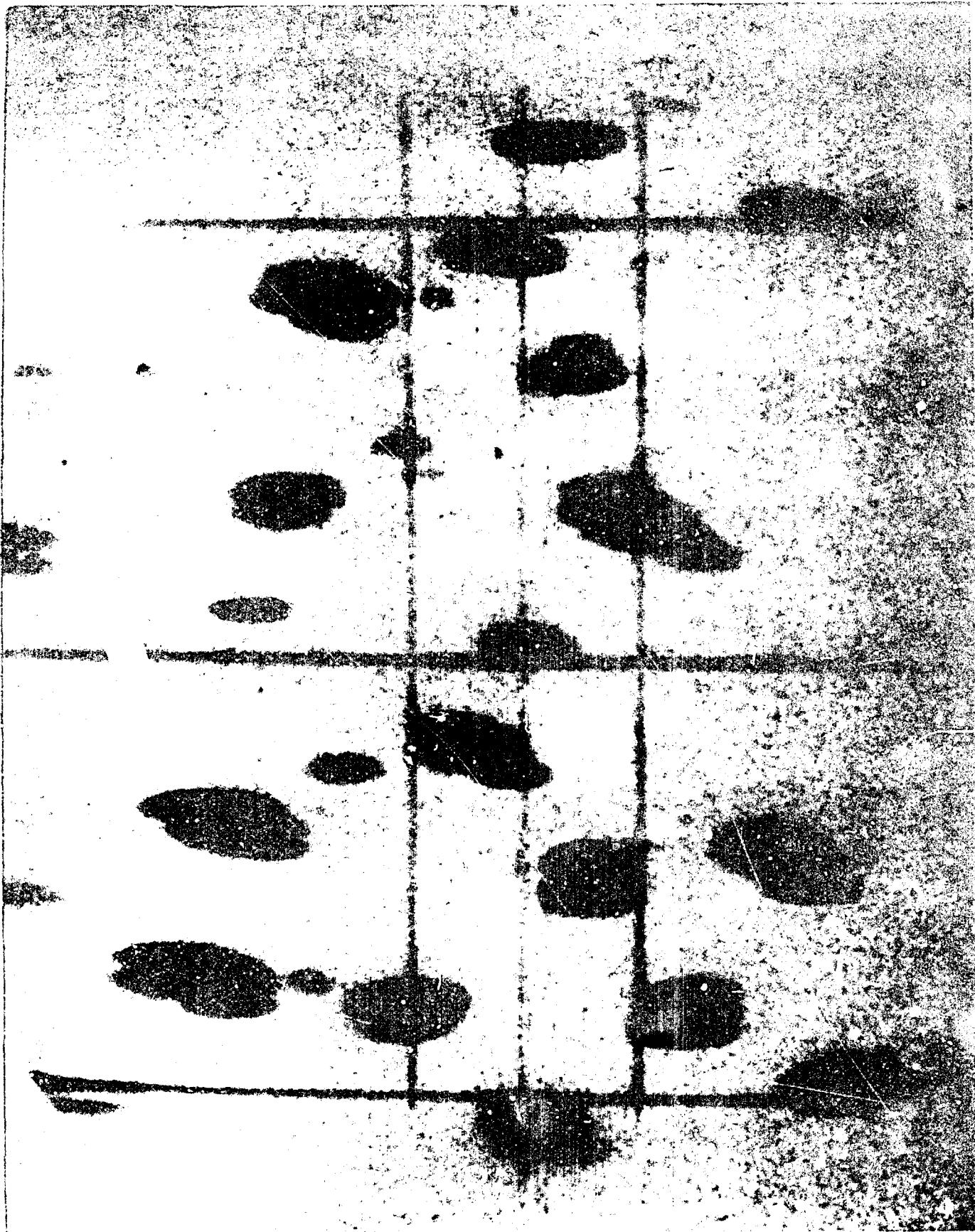
AB-CR-197-PBM 9/29 July 46/8 1/4" /OBL/1000'. Secret Print  
34. NAGATO on 29 July. Compare freeboard on port side aft with  
that of starboard side shown on photograph, page 19.

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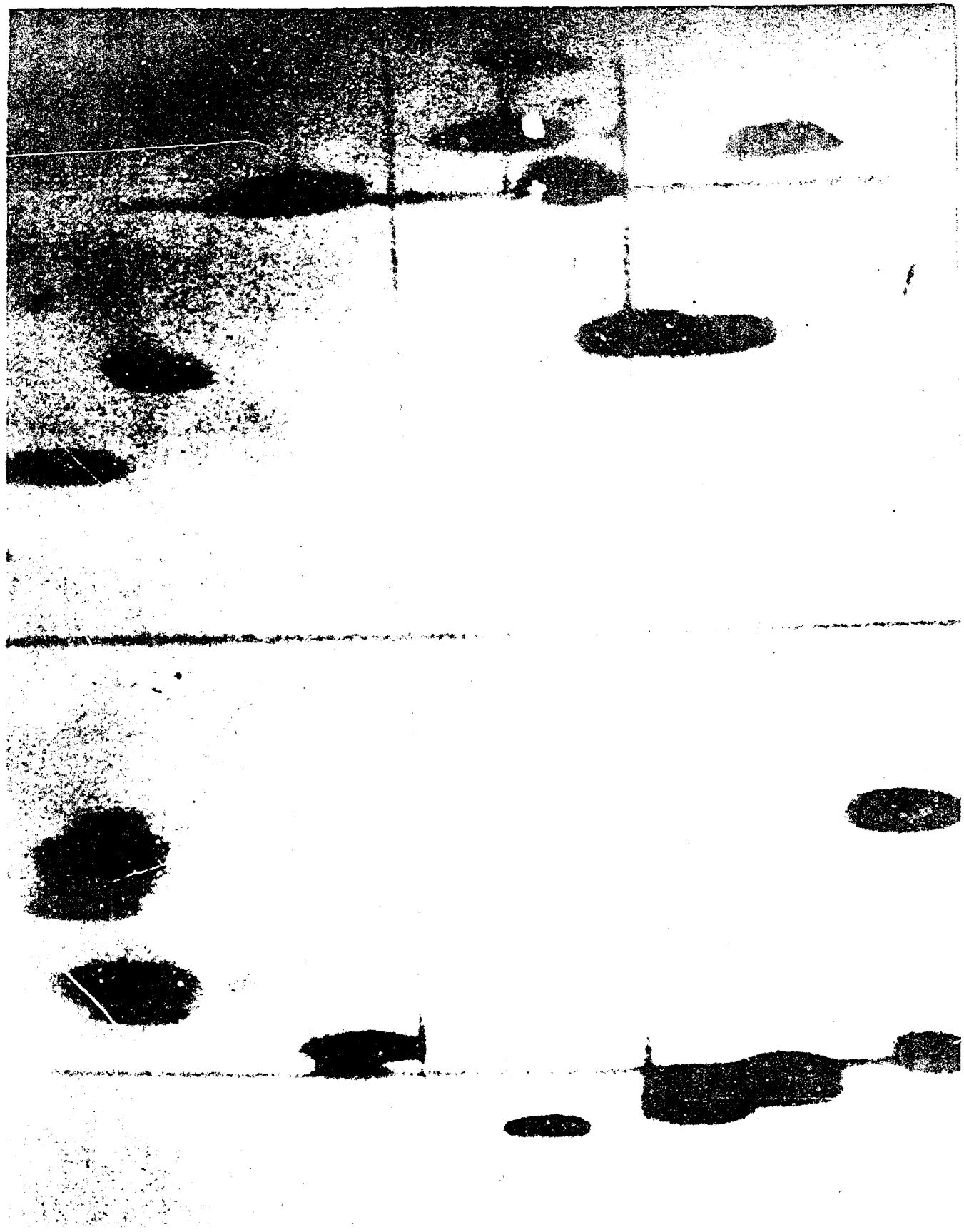
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MPG-1, Radar Scope Picture Frame 30. Original position of  
NAGATO in array (Approximately 700 yards from center of array)

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MPG-1, Radar Scope Picture Frame 105. NAGATO at her maximum displacement (approximately 1100 yards) from the center of the array, compare with photograph on page 23.

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**Defense Special Weapons Agency**  
6801 Telegraph Road  
Alexandria, Virginia 22310-3398

TRC

18 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER  
ATTENTION: OMI/Mr. William Bush (Security)

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency has declassified the following reports:

/ ✓AD-366588 4	XRD-203-Section 12 ✓
AD-366589 ✓	XRD-200-Section 9
AD-366590 ✓	XRD-204-Section 13
AD-366591 ✓	XRD-183
/ ✓AD-366586 ✗	XRD-201-Section 10 ✓
✓ ✓AD-367487 ✗	XRD-131-Volume 2 ✓
✓ ✓AD-367516 ✗	XRD- 143 ✓
✓ ✓AD-367493 ✗	XRD-142 ✓
AD-801410L ✓	XRD-138 ✓
AD-376831L ✓	XRD-83 ✓
AD-366759 ✓	XRD-80
✓ ✓AD-376830L ✗	XRD-79 ✓
/ ✓AD-376828L ✗	XRD-76 ✓
✓ ✓AD-367464 ✗	XRD-106 ✓
AD-801404L ✓	XRD-105-Volume 1 ✓
/ ✓AD-367459 ✗	XRD-100 ✓

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18 April 1997

Subject: Declassification of Report

AD-376836L✓	XRD-98✓
AD-376835L✓	XRD-97✓
AD-376834L✓	XRD-96✓
AD-376833L✓	XRD-95✓
✓ AD-376832L✓	XRD-94✓ <i>re-ingest</i>
✓ AD-367458X	XRD-93✓
✓ AD-367457✓	XRD-92-Volume 2✓
✓ AD-367456✓	XRD-91-Volume 1✓
✓ AD-367455✓	XRD-90✓
✓ AD-367454✓	XRD-89✓
✓ AD-367453✓	XRD-88✓
✓ AD-367452✓	XRD-87✓
AD-366764✓	XRD-86
AD-376837L✓	XRD-99
AD-366758✓	XRD-78
AD-366734✓	XRD-44
AD-366763✓	XRD-85✓
AD-376829L✓	XRD-77✓
✓✓ AD-367462X	XRD-103✓
✓✓ AD-367463X	XRD-104✓
✓✓ AD-367461X	XRD-102✓
AD-367460✓	XRD-101✓

TRC

18 April 1997

Subject: Declassification of Reports

AD-801406L ✓ XRD-114:

In addition, all of the cited reports are now **approved for public release; distribution statement "A" now applies.**

*Ardith Jarrett*  
ARDITH JARRETT  
Chief, Technical Resource Center